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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/820,065	03/28/2001	Vladimir Dubinsky	414-12346-CIP	4046

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EXAMINER

DANG, HUNG Q

ART UNIT	PAPER NUMBER
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2635

DATE MAILED: 09/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/820,065

Applicant(s)

DUBINSKY ET AL.

Examiner

Hung Q Dang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 March 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4 and 6.
- ☐ Interview Summary (PTO-413) Paper No(s). _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other:

DETAILED ACTION

Claim Objections

1. Claim 1 is objected to because of the following informalities: Claim 1 contains the terms "capable of". It has been held that the recitation that an element is "capable of" performing a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchison*, 69 USPQ 138. Therefore, the claimed limitation "the actuator capable of inducing an axial reciprocating movement of reaction mass relative to the elongated tube, whereby the reciprocating movement causes an acoustic wave to transmit into the elongated member" will not be given any patentable weight. Appropriate correction is required.

Specification

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

3. The abstract of the disclosure is objected to because it contains a phrase "the present invention". Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claim 1, 2, 5, 9, 11, 13, 14, 18, 21-24, 28, 29 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Petersen et al. U.S. Patent 4,314,365.

Regarding claim 1, Petersen et al. teaches an acoustic telemetry apparatus for transmitting signals from a first location within a well borehole to a second location, comprising:

- An elongated member having a longitudinal bore (Figure 4);
- A reaction mass (Figure 7, unit 232 and column 8 lines 8-26) moveably disposed on the elongated member; and
- An actuator (Figure 7, unit 234) coupled to the elongated member and the reaction mass, the actuator capable of inducing an axial reciprocating movement of reaction mass relative to the elongated tube, whereby the reciprocating movement causes an acoustic wave to transmit into the elongated member, the acoustic wave being indicative of the signal (column 8 lines 8-26).

Regarding claims 2 and 24, Petersen et al. also suggests a controller for controlling the apparatus (column 8 lines 26-38).

Regarding claim 5, Petersen et al. also teaches a production tube (Figure 2, unit 40).

Regarding claims 9 and 28, Petersen et al. also teaches the apparatus claimed in claim 9, wherein the actuator (Figure 7, unit 234) is coupled to the reaction mass (Figure 7, unit 232) with a biasing element (figure 7, unit 238).

Regarding claims 11 and 29, Petersen et al. also teaches that the reciprocating movement is an oscillation at a predetermined frequency (column 10 lines 5-7).

Regarding claims 13, 27 and 31, the actuator disclosed by Petersen et al. is also a fluid control device (column 8 lines 27-38).

Regarding claim 14, the fluid control device disclosed by Petersen et al. is also a fast operating valve (column 8 lines 27-38).

Regarding claim 18, the fluid control device disclosed by Petersen et al. is also a variable flow restrictor (column 8 lines 27-38).

Regarding claims 21 and 22, the first passageway (Figure 4) disclosed by Petersen et al. is also a substantially annular space between the reaction mass and the elongated member and extending at least partially along the length of the reaction mass (Figure 4, units 232). Said passageway is also a central bore extending through the reaction mass (Figure 4).

Claim 23 is rejected for the same reasons as claim 1.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 10, 15-17, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Petersen et al. U.S. Patent 4,314,365 in view of Silverman U.S. Patent 3,934,673.

Regarding claim 10, Petersen et al. teaches the apparatus as claimed in claim 10, except wherein the biasing element is at least one spring element.

Silverman, in the same field of endeavor, teaches a spring element as a biasing element (column 5 lines 54-67) connecting to the actuator.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a spring as a biasing element coupled to the actuator of the apparatus disclosed by Petersen et al., as evidenced by Silverman, in order to resiliently actuate said actuator against the reaction mass.

Regarding claims 15-17, as mentioned above, Petersen et al. teaches an acoustic telemetry apparatus including a valve as claimed in claim 15, however, Petersen et al. does not teach that said valve is a rotating valve. A skilled in the art would recognize that rotating valve has been commonly used in such hydraulic system, as evidenced by Silverman.

Silverman also teaches an acoustic telemetry apparatus, wherein a rotating valve is utilized to control a hydraulic system, wherein said rotating valve is driven by a motor (column 5 lines 54-67), and wherein said motor is a synchronous motor (column 4 lines 55-60).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a rotating valve controlled by a synchronous motor to the apparatus disclosed by Petersen et al., as evidenced by Silverman, in order to synchronously control the hydraulic system disclosed by Petersen et al.

Regarding claims 19 and 20, poppet valve and pilot valve have been commonly known and used in hydraulic systems to control fluid movement. Therefore, by conventionality, it would have been obvious to apply poppet and pilot valves to the apparatus disclosed by Petersen et al.

Claims 32-33 are rejected for the same reasons as claims 16-17.

8. **Claims 6-8, 12 and 30** are rejected under 35 U.S.C. 103(a) as being unpatentable over Petersen et al. U.S. Patent 4,314,365 in view of Paulsson U.S. Patent 4,715,470.

Regarding claims 6 and 7, as mentioned above, Petersen et al. teaches an acoustic telemetry apparatus as claimed in claims 6 and 7, except wherein the actuator is an **electromagnetic** device.

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Paulsson, in the same field of endeavor, teaches an acoustic telemetry apparatus, wherein the actuator is a **linear electromagnetic** device (column 3 lines 20-47 unit 30).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a linear electromagnetic actuator coupled to the reaction mass and to the elongated tube of the apparatus disclosed by Petersen et al., as evidenced by Paulsson, to actuate the reaction mass in order to generate a data signal.

Regarding claim 8, Paulsson also teaches at least two electromagnetic devices, wherein the first electromagnetic device (column 4 lines 2942 and Figure 3 units 130 and 230) being coupled to the reaction mass at a third location and the second electromagnetic device being coupled to the reaction mass at a fourth location spaced apart from the third location.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide at least two electromagnetic actuators to the apparatus disclosed by Petersen et al., as evidenced by Paulsson, in order to actuate said reaction mass.

Regarding claims 12 and 30, even though Petersen et al. does not specifically teach that the reciprocating movement is an oscillation at a resonant frequency, however, a skilled in the art would recognize that wave oscillates best at resonant frequency. Therefore, it would have been obvious to provide reciprocating movement at

a resonant frequency to the apparatus disclosed by Petersen et al. in order to achieve optimal result.

9. Claims 3-4 and 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Petersen et al. U.S. Patent 4,314,365 in view of Bedenbender et al. U.S. Patent 4,519,053.

Regarding claims 3 and 25, Petersen et al. teaches an acoustic telemetry apparatus as claimed in claim 3, except teaching a displacement sensor for sensing a position of the reaction mass relative to the elongated member.

Bedenbender et al., in the same field of endeavor, teaches an acoustic telemetry apparatus, which includes a displacement sensor for sensing a position of the reaction mass (Figure 2, unit 88) relative to the elongated member (column 7, lines 56-67 and Figures 2 and 8).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a displacement sensor for sensing a position of the reaction mass (Figure 2, unit 88) relative to the elongated member of the apparatus disclosed by Petersen et al., as evidenced by Bedenbender et al., in order to subsequently control the actuator.

Regarding claims 4 and 26, Bedenbender et al. also teaches a controller (Figure 8 unit 142), a displacement sensor and a feedback loop (Figure 8 unit 136) connected to the sensor and controller for conveying an output of the displacement

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sensor to the controller, the conveyed output at least partially determinative of controller actions in controlling the actuator (column 7, lines 56-67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a displacement sensor and a feedback loop connected to the sensor and controller to the apparatus disclosed by Petersen et al., as evidenced by Bedenbender et al., in order to control the actuator.

Conclusion

10) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Dang whose telephone number is 703-305-1836. The examiner can normally be reached on Monday through Friday from 8:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Horabik, can be reached on (703) 305-4704. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Hung Dang
9/11/2003
H.D.

HD

MICHAEL HORABIK
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

[Signature]